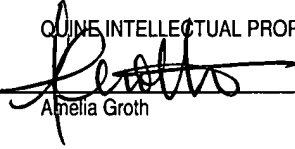


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QUINE INTELLECTUAL PROPERTY LAW GROUP, P.C.

By


Amelia Groth

Attorney Docket No. 407T-895820US

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:

Ben Shen, et al.

Application No.: 09/477,962

Filed: January 5, 2000

For: BLEOMYCIN GENE CLUSTER
COMPONENTS AND THEIR USES

Examiner: Kathleen M. Kerr

Art Unit: 1652

LETTER TO OFFICIAL DRAFTSPERSON

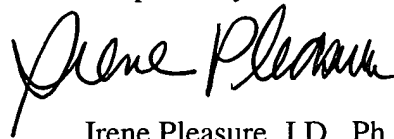
#25
B.G.J.
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Mail Stop RCE
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P.O. Box 1450
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Sir:

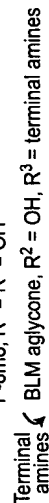
Applicant hereby submits 19 sheets of formal drawings to be made of record in
the above-identified case.

Respectfully submitted,



Irene Pleasure, J.D., Ph.D.
Reg. No. 45,506

QUINE INTELLECTUAL PROPERTY LAW GROUP, P.C.
P.O. BOX 458
Alameda, CA 94501
(510) 337-7871
Fax (510) 337-7877





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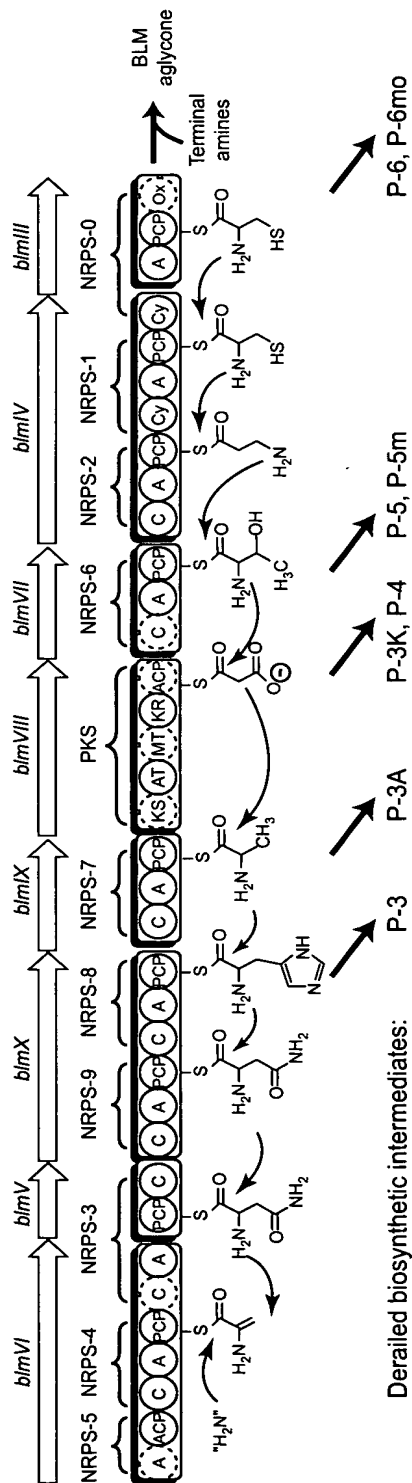


Fig. 1B



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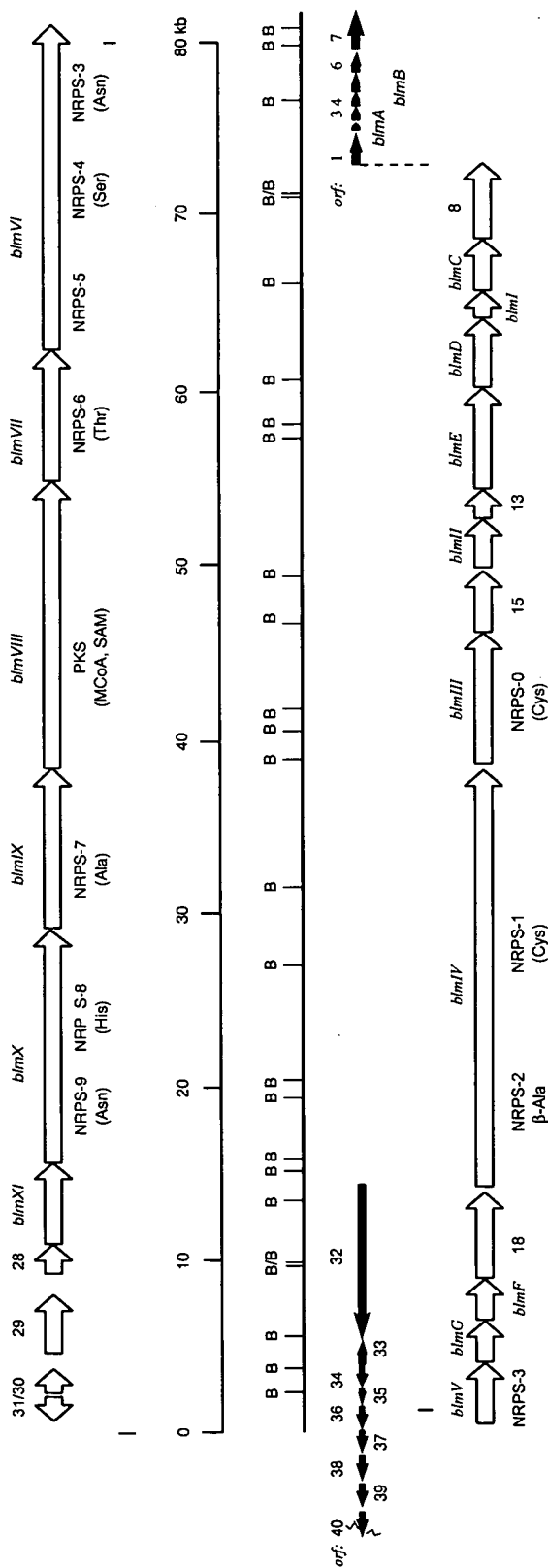


Fig. 2



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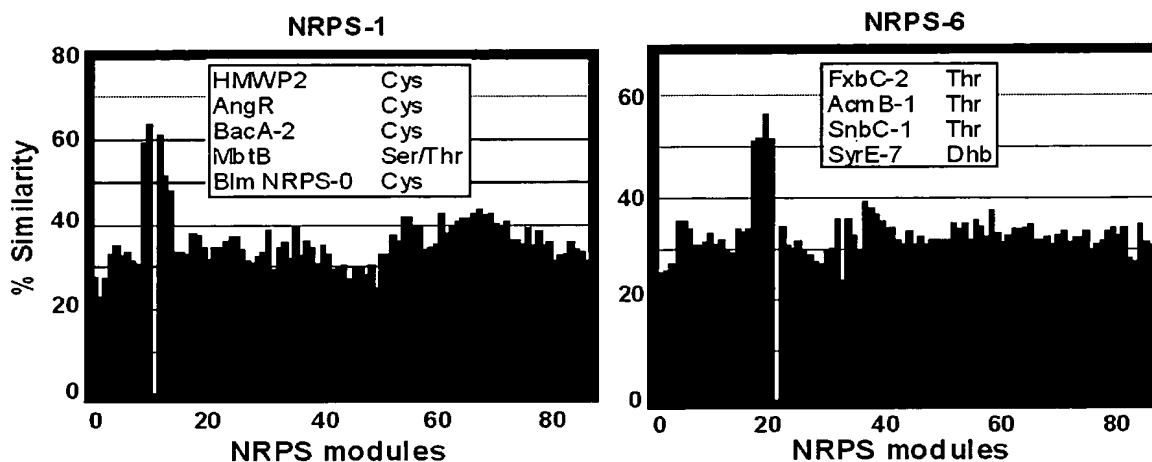


Fig. 3A

		Residues (PheA numbering) (16)							
NRPS module	Substrate	236	239	278	299	301	322	330	331
HMWP2	Cys	L	Y	N	M	S	M	I	W
AngR	Cys	L	Y	N	M	S	M	I	W
BacA-2	Cys	L	Y	N	L	S	L	I	W
MbtB	Ser/Thr	M	L	N	A	G	L	V	H
Blm NRPS-0	Cys	L	Y	H	L	G	L	P	W
Blm NRPS-1	Cys	L	Y	N	L	S	L	I	W
SyrE-7	Dhb	F	W	N	V	G	M	V	H
AcmB-1	Thr	F	W	N	V	G	M	V	H
SnbC-1	Thr	F	W	N	I	G	M	V	H
FxbC-2	Thr	F	W	N	V	G	M	V	H
Blm NRPS-6	Thr	F	W	S	V	G	M	I	H

Fig. 3B



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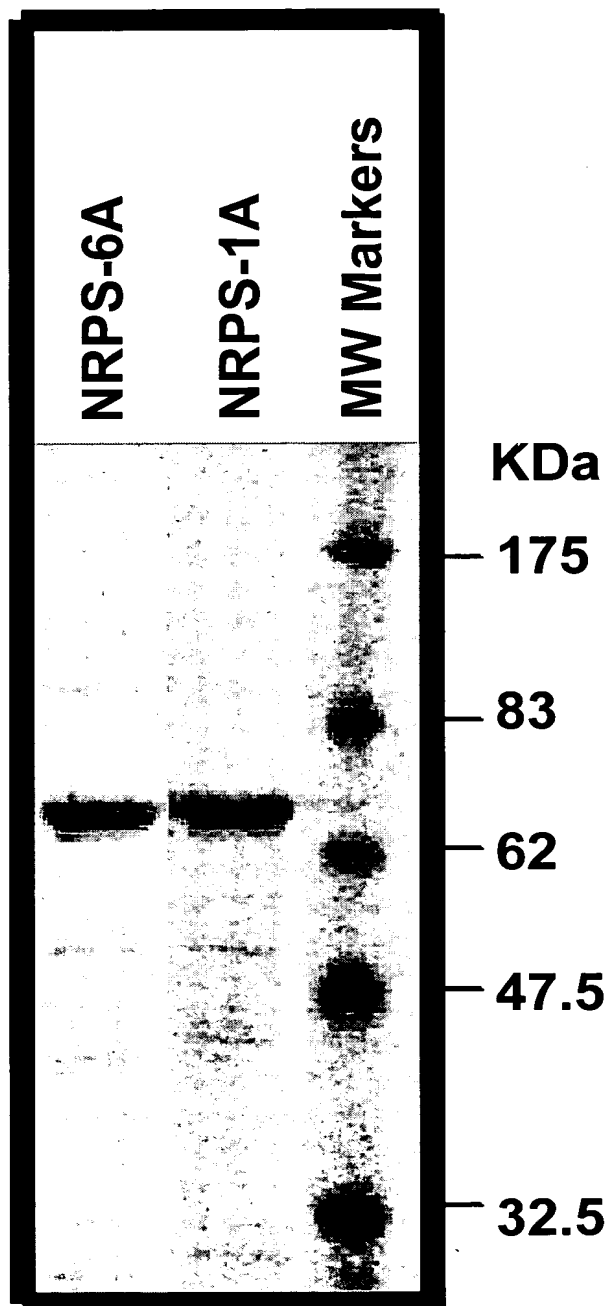


Fig. 3C



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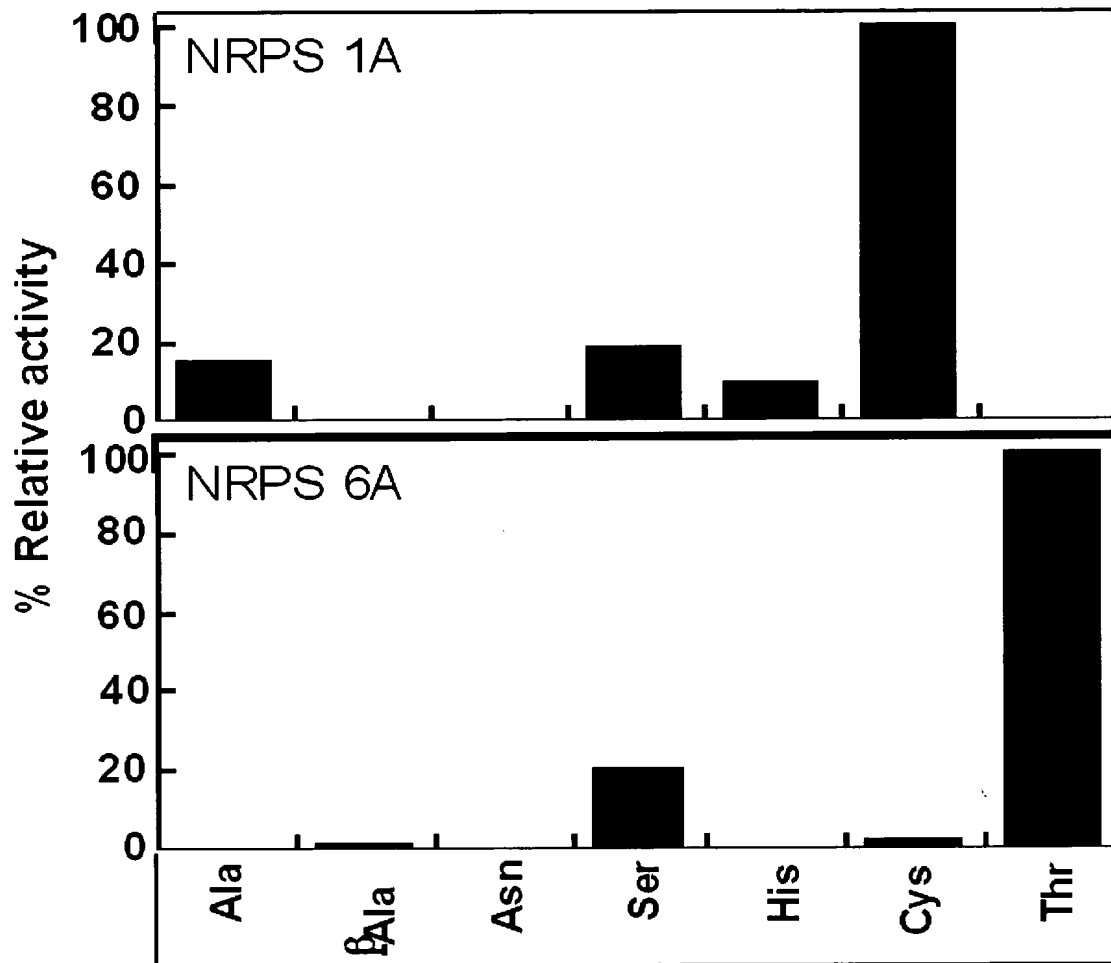
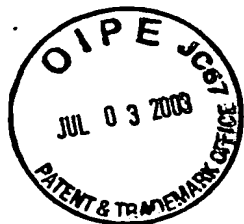


Fig. 3D



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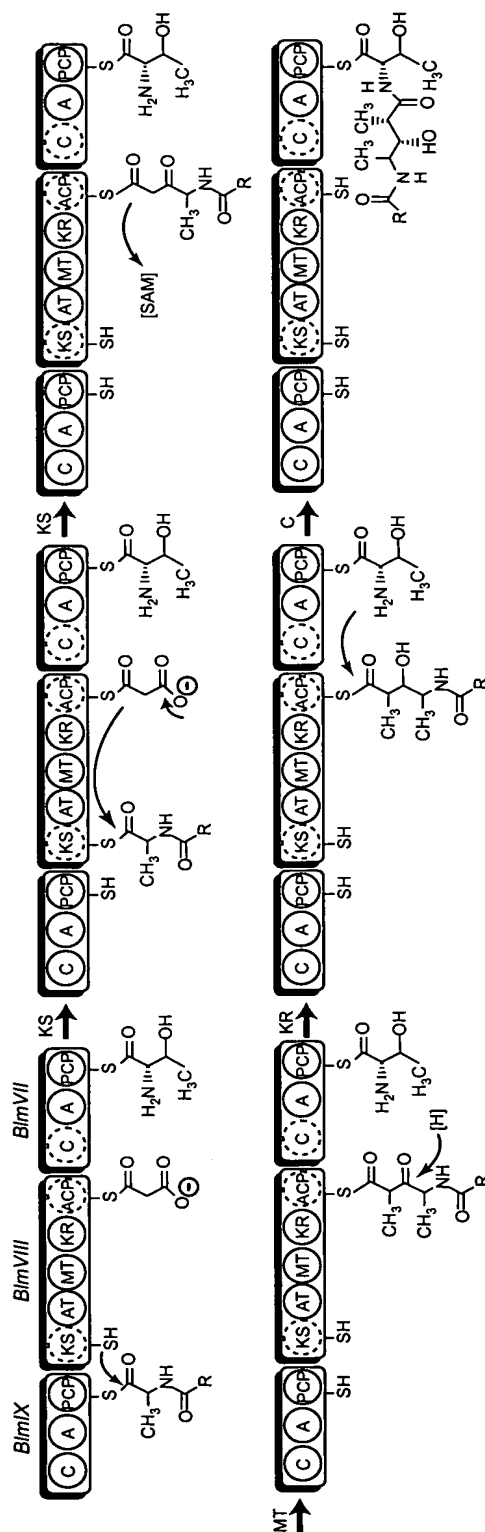


Fig. 4



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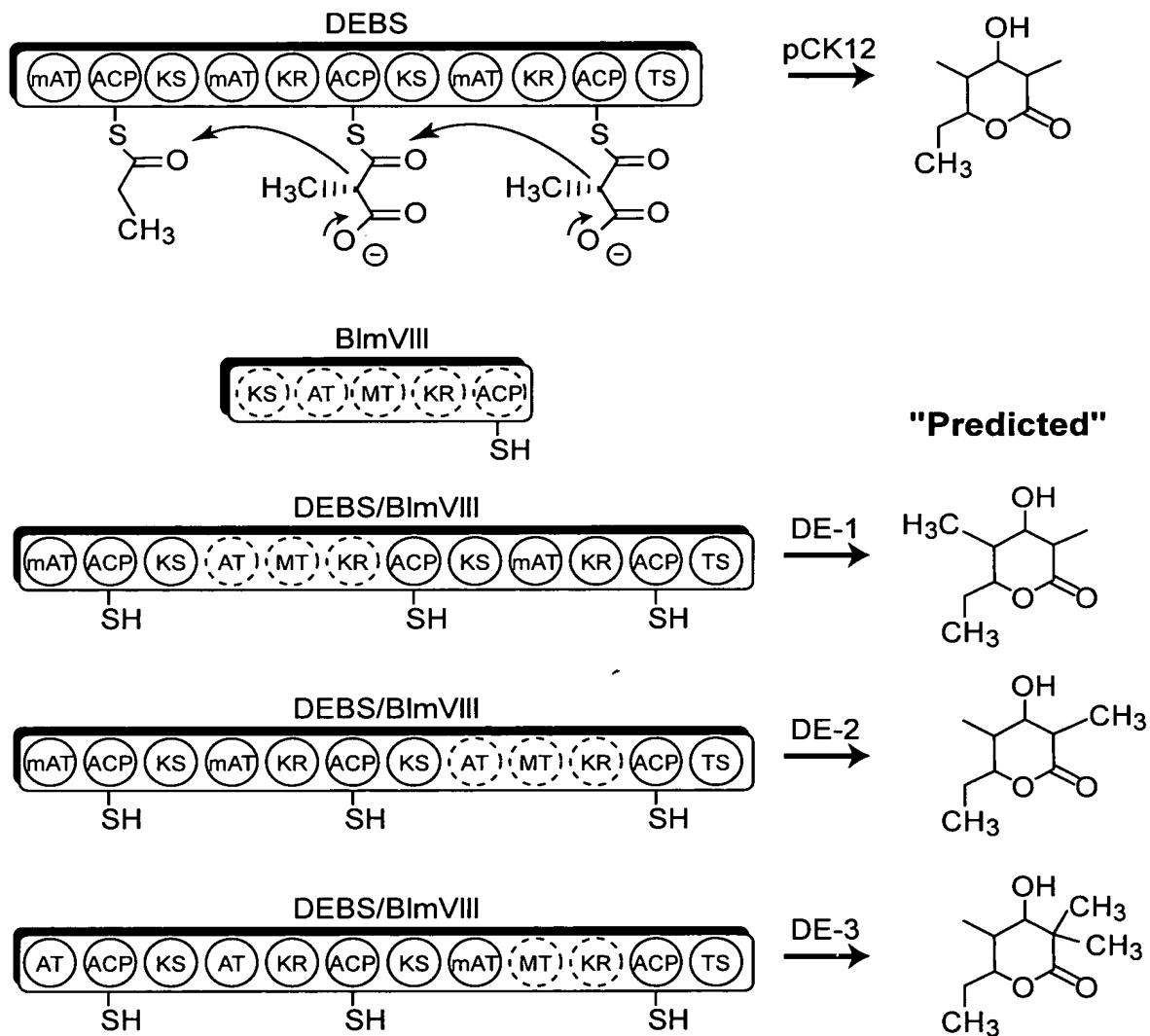
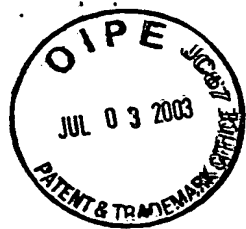


Fig. 5



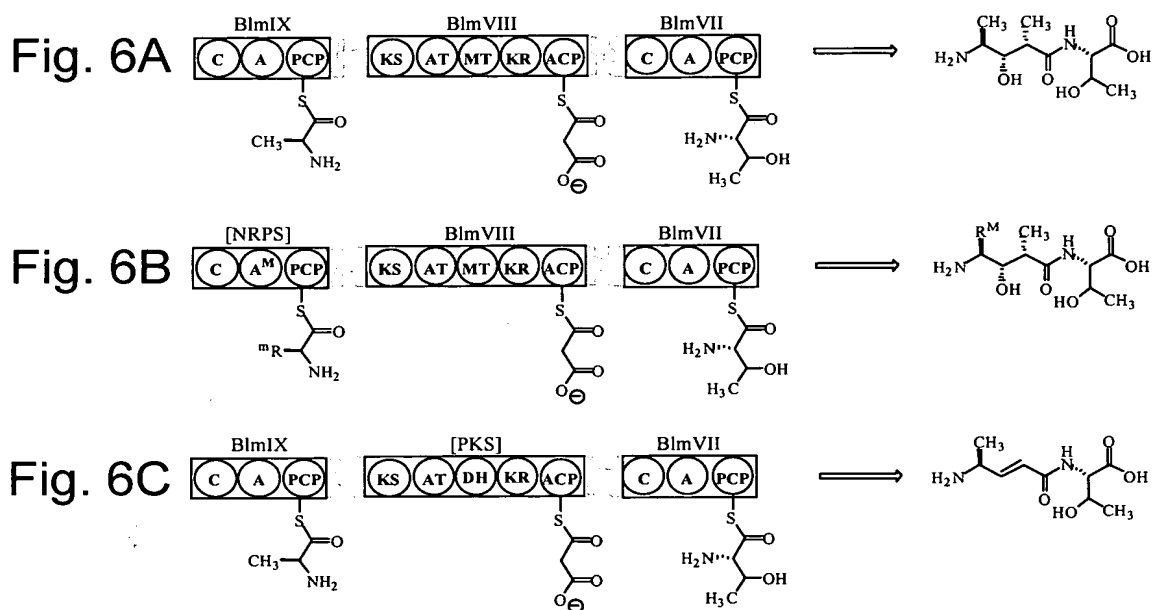
BLEOMYCIN GENE CLUSTER COMPONENTS
AND THEIR USES

Ben Shen, et al.

Serial No.: 09/477,962

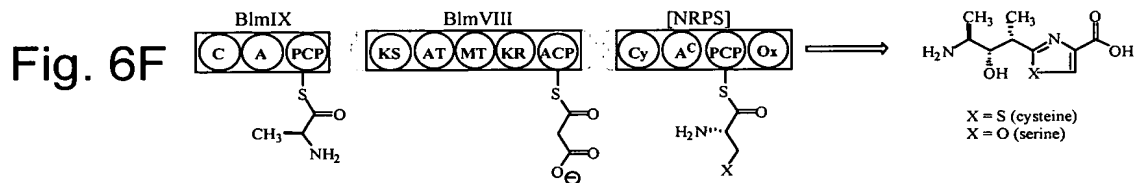
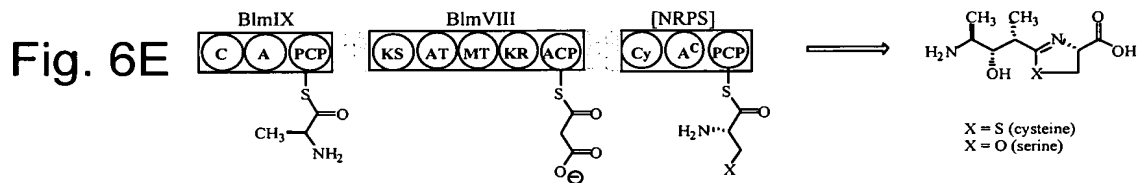
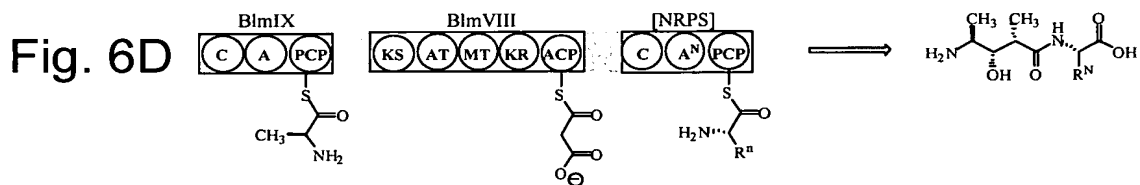
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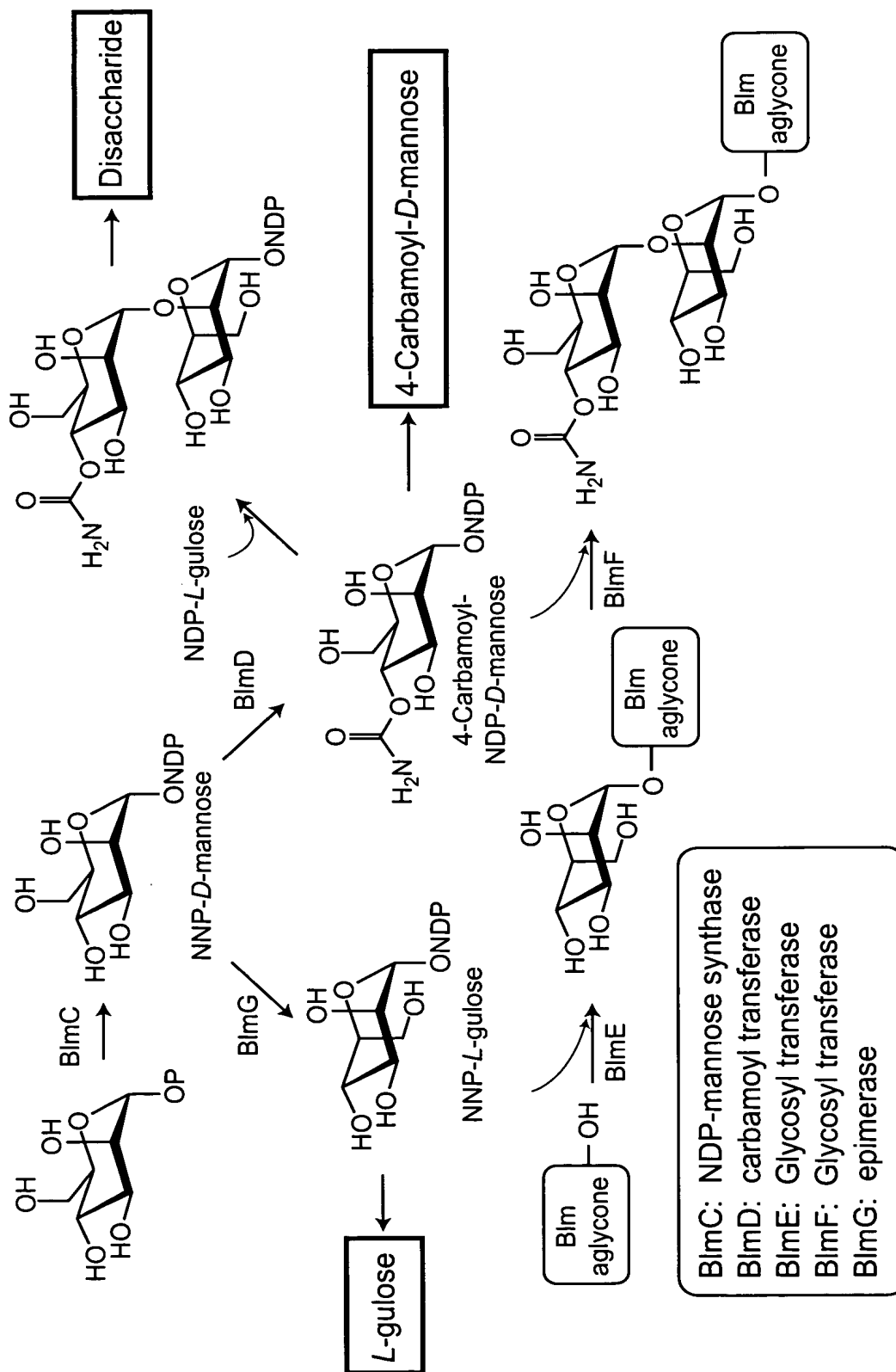


Fig. 7

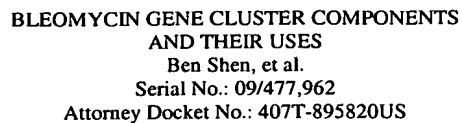
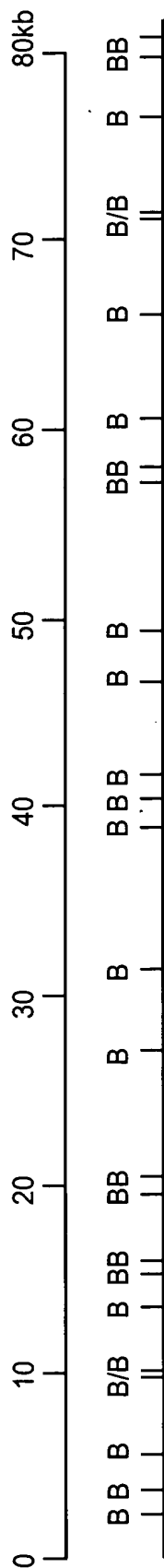


Fig. 8A





BLEOMYCIN GENE CLUSTER COMPONENTS
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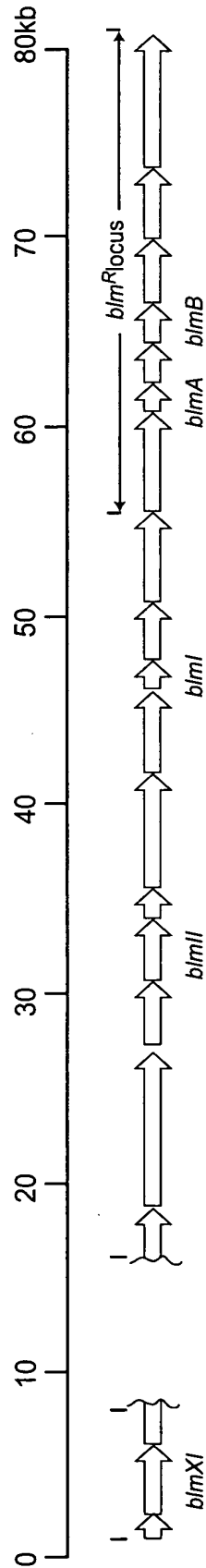


Fig. 8B



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-18 RBS
CC GGACGG CGGCCCGCTC
ATGAGCGCCCCGGGGGCGAGCGGACCCGGCGCGCGCTCGAACGCGACATCGCCGCGATCTGGGCCGAGACCCCTCGGCAGGGACAGCGTC 93
M S A P R G E R T R R R A L E R D I A A I W A E T L G R D S V
GGCCGCGACGAGGACTTGGCCGCGCTGGGCGGCAACTCCATCCACGCCATCAAGATCACCAACCGGGTGGAGGAACCTCGTCGACGCCGAGCTG 186
G P H E D F A A L G G N S I H A I K I T N R V E E L V D A E L
TCCATCCGCGCTCTGCTCGAGACGCGCACCGTGGCGGGCATGACGGACCAACGCTCACGCCACGCTCACGGGGGAGCGGGACCGGTGA 273
S I R V L L E T R T V A G M T D H V H A T L T G E R D R *

Fig. 8C

Grs-2 3045-ISIGTEYVAPRTMLEGKLEETWKDVGLQRVGTDDFTIGGHSL-3089
Srfa-3 960-DQLABEWIGERNEMEETTAQIWSEVIGRKQIGTDDFPALGGHSL-1004
Vir-S 557-GRSVEGRGVPTTPOQEILASLFAEVLGLSKVGTEDFEDLGGHSL-601
Saf-B 1661-LDPGQDYLAPENELEARTAAATWEGLIIRRVGVDSFEDLGGNSL-1705
BlmI 1-MSAPRGERTRRALERDIAATWAETLGRDSVPEDEFAATGCNSI-45
consensus 1-i g eyvapR le ia iw evLgr rvGiHddFf lGGhSl- 45

Grs-2 3090-KAMAVISQVHKECQTEVPLRVLFETETIQGLAKYIEETDTEQYMA-3134
Srfa-3 1005-KAMTAVPH.QQELGIDLPKLLFFAETIACISAYLKNGGSDGLQD-1048
Vir-S 602-LATRLTSRIRTVLGAEIAVRDLFEAETVEALAEETLEEAREVRPAL-646
Saf-B 1706-LATRLATRLAATLQVOAGVTVFEHRIVAAQAAHFTQATKTHQAH-1750
BlmI 46-HAIKITNRVEELVDAELSIRVLLFTRIVAGMTDHSVHATLTGERDR-90
consensus 46-kAmrv srv 1 ev vrvlfe pTvagla i g t - 90

Fig. 9



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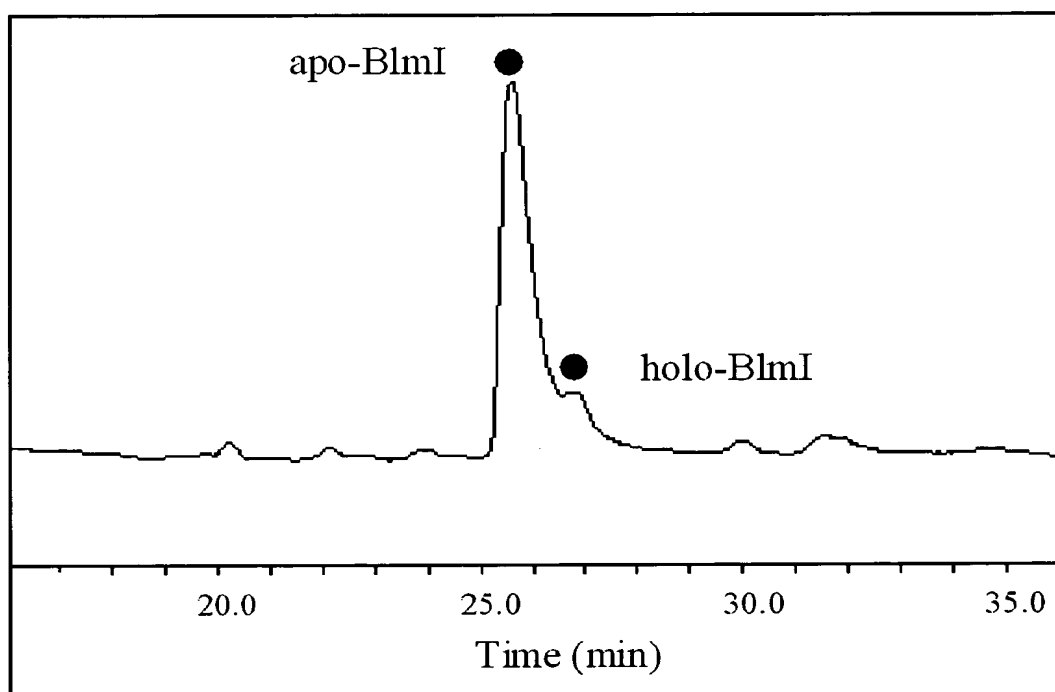


Fig. 10A



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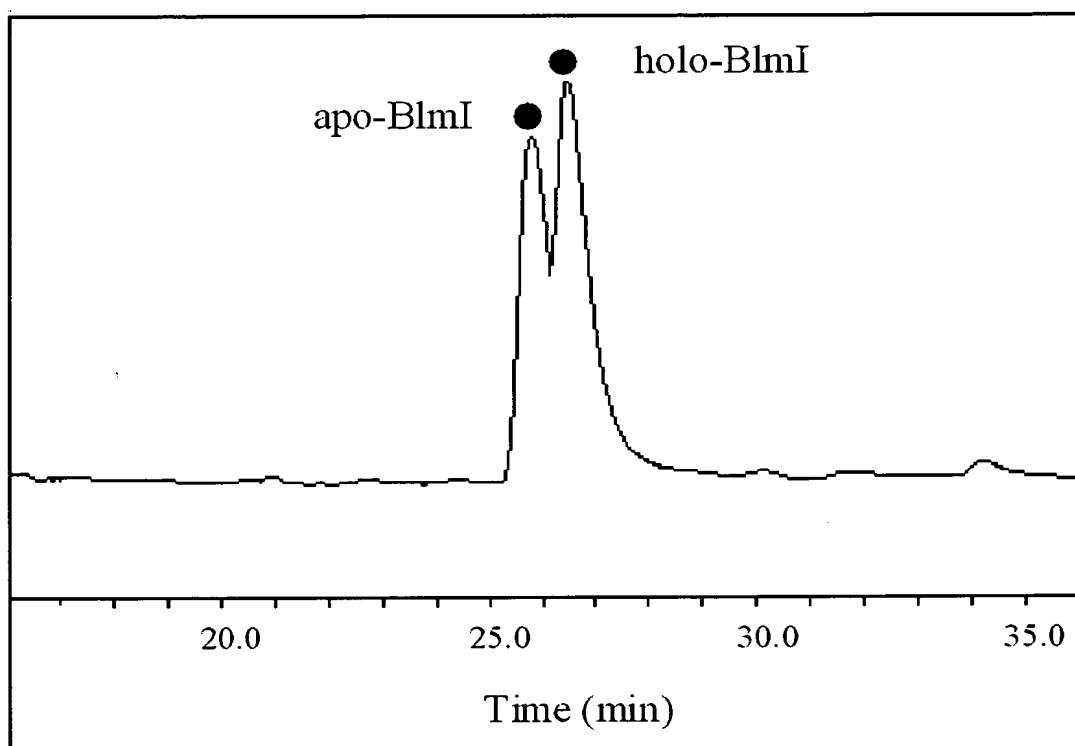


Fig. 10B



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Nonreiterative Type I Modular Protein Template

Fig. 11A
PKS

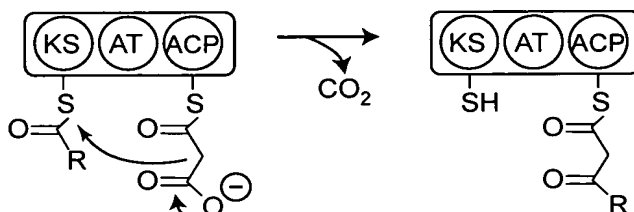
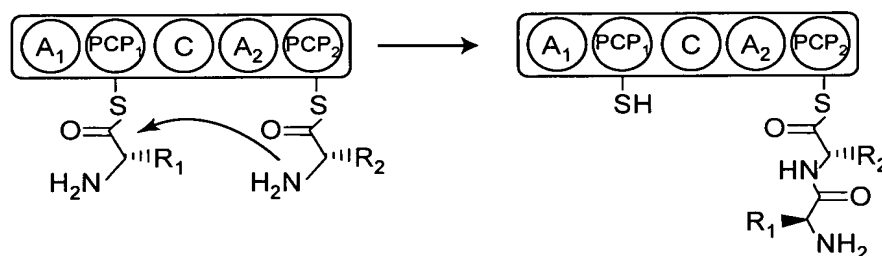


Fig. 11B
NPRS



Iterative Type II Protein Complex

Fig. 11C
PKS

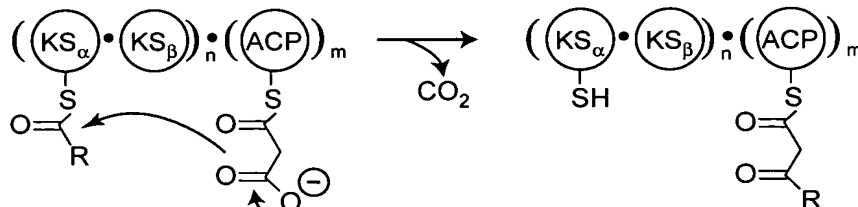
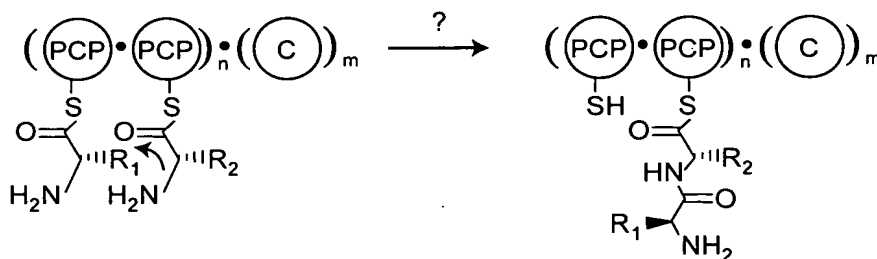


Fig. 11D
NPRS





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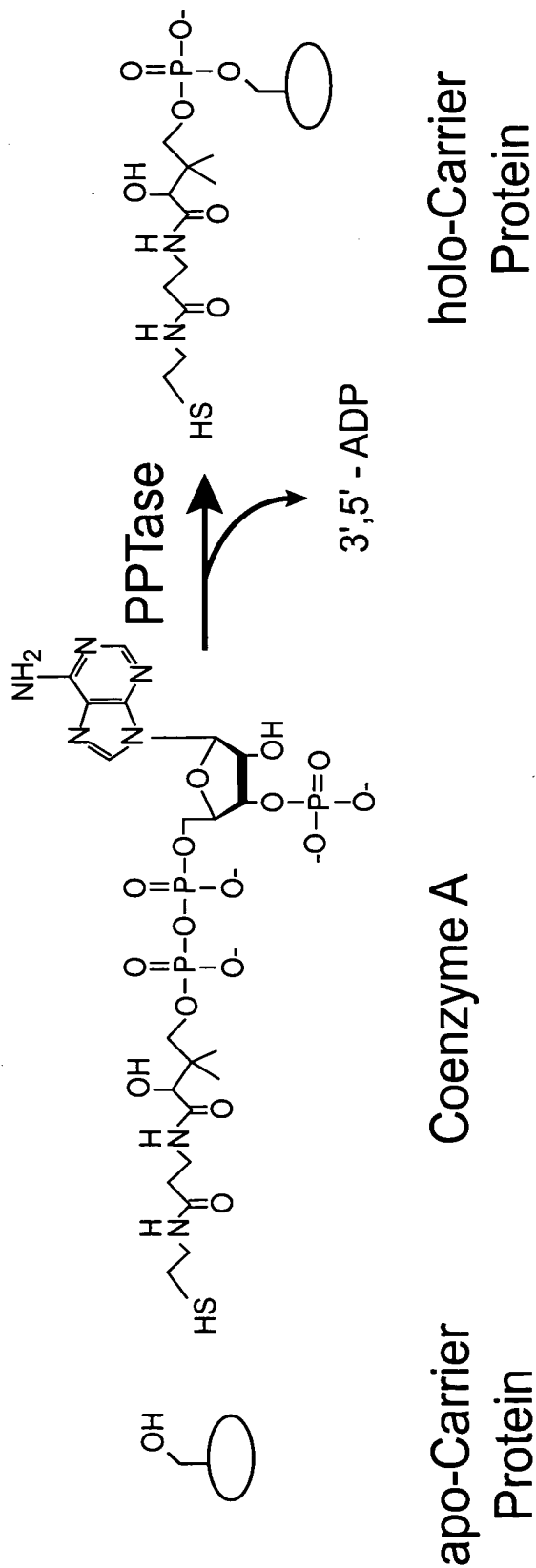


Fig. 12



BLEOMYCIN GENE CLUSTER COMPONENT
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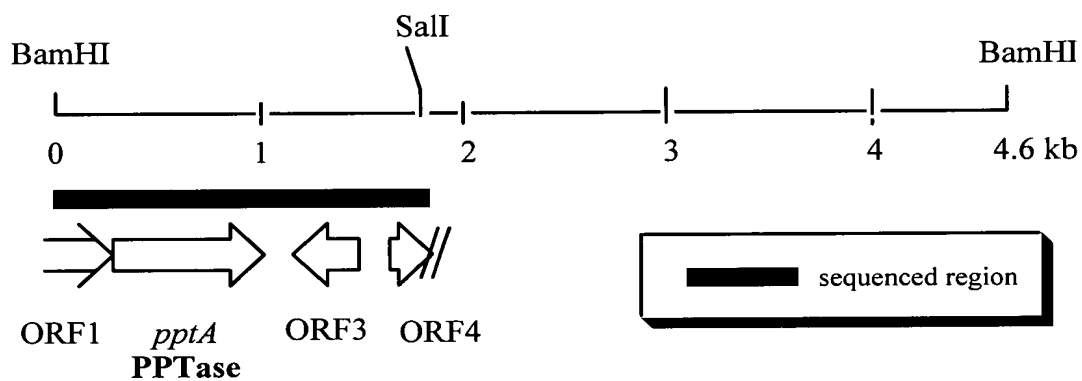


Fig. 13